UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF MASSACHUSETTS

SILAS CALHOUN and EMILY CALHOUN, Individually and as Parents and Next Friends of ESTELLA CALHOUN, Plaintiffs v. UNITED STATES OF AMERICA Defendant	CIVIL ACTION NO. 04-10480-RGS

PLAINTIFFS' PROPOSED FINDINGS OF FACT AND RULINGS OF LAW

The plaintiffs submit the following request for findings of fact and rulings of law, grouped by issue, based on evidence presented at trial during the week of April 9th – April 13, 2007.

I. DR. ERIC DAUB AND THE TECHNICIAN STAFF AT THE HANSCOM AIR FORCE BASE CLINIC, AS EMPLOYEES OF THE DEFENDANT UNITED STATES, WERE NEGLIGENT WITH RESPECT TO THE CARE OF ESTELLA CALHOUN BECAUSE OF THEIR FAILURE TO RECOGNIZE AND TREAT ESTELLA'S SEVERE DEHYDRATION

1. Emily Calhoun gave birth to Estella Calhoun on February 25, 2000 at the Beth Israel Deaconess Medical Center (BIDMC). Her weight at birth was 8 pounds, 13 ounces. When mother and baby were discharged two days later on February 27, 2000, Estella's weight was recorded to be 8 pounds, 8 ounces. The discharge instructions from the hospital indicated that Emily was to follow-up with pediatric care for Estella at Hanscom Air Force Base (hereinafter referred to as "Base Clinic") within one to two weeks. (Pages 0001, 0018, attached hereto as part of Exhibit 1).

2. During her stay at BIDMC and continuing after discharge from the hospital, Emily Calhoun, who was breastfeeding Estella, became concerned about the adequacy of the

breastfeeding, and in particular about the fact that Estella was not stooling. On the day after discharge from the hospital, February 28, 2000, Emily made an appointment to see a physician at the Base Clinic. (Testimony of Emily Calhoun, p. 18, attached hereto as Exhibit 2).

3. On February 29th, Emily and Silas Calhoun brought Estella into the Base Clinic and met with Dr. Eric Daub, a physician trained as a family practitioner, (not as a pediatrician), with only 1 ½ years experience. As reflected in the record of the visit on February 29, 2000, Emily was concerned that there were "no stools yet" and that Estella "was passing meconium and urine until 3 days ago and since that (sic) was only having wet diapers." Furthermore, the record also indicates that Dr. Daub noted that Estella's "skin is loose" and that Estella was suffering from "neo-natal jaundice." (Exhibit 1, p. 0074)

4. Estella's weight was recorded as 8 pounds, 13 ounces by the technicians, and this same weight was noted by Dr. Daub in his notes. Dr. Daub also noted that Estella's weight at discharge from the Beth Israel Hospital was 8 pounds, 8 ounces. (Exhibit 1, at 0074).

5. The weight recorded at the Base Clinic, 8 pounds, 13 ounces, is inconsistent with the natural history of newborn babies because the accepted and usual course of a newborn's life is for them to lose weight, up to 5 to 10% of their birth weight, within the first week of life. Therefore, it would have been almost impossible, or at least highly unusual, for a 4 day old to be back up to its birth weight, particularly in a situation where the baby was breastfed. Because the weight recorded was so inconsistent with the natural history of newborn babies, it was a deviation from the standard of care for Dr. Daub not to have Estella's weight rechecked in his presence. (Testimony of Margaret Wust-Smith, p. 21-23, attached hereto as Exhibit 3) The defendant's expert, Dr. Steven Ringer, also agreed that the weight recorded by the technicians, "doesn't make any sense.", and was "highly improbable". (Testimony of Steven Ringer, pp. 34,

65, attached hereto as Exhibit 4).

6. Dr. Daub also negligently failed to address Emily Calhoun's chief complaint, that is, that the baby was not stooling. Babies usually pass meconium within the first 48 hours of life and

> by the third-certainly by the fourth day of life, a mother who is breastfeeding should have an infant who is producing many stools per day; one per feeding at least, or one per every other feeding. So, to have no bowel movements at all is very concerning, and to not address the absence of bowel movements…..is a deviation from accepted standards of care.

(Wust-Smith at 23).

7. A finding that Estella's skin is loose, is also a sign of dehydration. (Wust-Smith at 25, and Ringer at 18). Babies do not normally have loose skin unless there is an absence of adequate fluid which would cause the skin to feel and look loose. In addition, the finding of neonatal jaundice on February 29 was also of concern because a baby will have an increased level of bilirubin if it is dehydrated, (Wust-Smith at 25-26), and Estella's bilirubin was elevated.

8. Both Mr. and Mrs. Calhoun testified that on the February 29th visit to the Base Clinic, Estella was weighed by the technician (Airman Paul Best) with a diaper and various articles of clothing, including one or two blankets. Newborn babies should be weighed naked and weighing the baby with clothing on is a deviation from the accepted standard of care. (Emily Calhoun at 18-21; Silas Calhoun, Exhibit 2 at 87; Wust-Smith at 40, Ringer at 67).

9. Because Estella's bilirubin was high, Dr. Daub asked Emily to bring Estella back into the Base Clinic the next day on March 1st. Significantly, the medical record of that day indicates that Estella's weight was recorded to be 8 pounds, 2 ounces. Although it is acceptable for a baby to lose between 5 and 10 percent of its weight within the first week, an 11 ounce

weight loss overnight, representing almost 8% of the baby's birth weight, should have raised a "red flag." (Wust-Smith testimony at 29-30). Dr. Ringer also agreed that an 11 ounce weight loss overnight would be "dramatic". (Ringer at 78).

10. Mr. and Mrs. Calhoun also testified that Estella was weighed by the technician (Airman Van Hoang) wearing various articles of clothing, on that date as well. Weighing the baby clothed in this manner was a deviation from the standard of care. (Emily Calhoun at 24; Silas Calhoun at 88).

11. During the February 29th and March 1st visits, good and accepted medical practice would dictate that Dr. Daub would have personally either reweighed the baby, or asked one of his technicians to reweigh the baby in a standard way, which is without clothing. As of March 1, given the 11 ounce weight loss (the weight loss was probably even greater given the improper weighing) Dr. Daub should have formulated a plan to follow-up and check the weight either on March 2nd, or to have admitted Estella to a hospital or to a home visiting nurse service, if that were available, for much closer monitoring of an at risk baby. (Wust-Smith at 42).

12. Instead, the Calhouns were reassured that Estella's jaundice was improving and were instructed by Dr. Daub to return on March 3rd. When they returned on March 3rd, Estella was noted to be "somnolent, skin is loose on her, weight is down nearly one lb." (Exhibit 1, p. 0077) Apparently, still not focusing on the risk of hypernatremic dehydration, Dr. Daub referred the Calhouns to Emerson Hospital, requesting that the Emerson Hospital physician "rule out sepsis and re-evaluate bilirubin." (Exhibit 1, p. 0078).

13. According to the attending physician at Emerson Hospital, Dr. Marianne Sutton, upon admission,

> Estella was extremely ill. This is a very unusual case by the severity of the child's illness. Estella had lost a kilo in weight, she was severely dehydrated. She had been feeding poorly. The mother had been attempting to breastfeed. The child had not had a stool for four days. The child was sleepy. Her skin was very yellow. She had had very few wet diapers.

(Testimony of Marion Sutton at pp. 14-15, attached hereto as Exhibit 5).

14. On examination, Dr. Sutton also found that Estella "appeared jaundiced and that her anterior fontanel, which is her soft spot, was very sunken. Her lips were very dry, her skin turgor was poor, and she was markedly dehydrated even on physical examination." (Sutton at 15) According to Dr. Sutton, "The baby had not been fed for a week." (Sutton at 36).

15. During Estella's admission at Emerson Hospital, Silas and Emily spoke with Dr. Russell Coleman, a pediatrician employed by the United States, who worked at the Base Clinic. Dr. Coleman indicated to the Calhouns that the technician staff at the Base Clinic did not follow standard operating procedures with respect to weighing Estella. (Testimony of Silas Calhoun, Exhibit 2, at 89).

16. During Estella's subsequent admission to Children's Hospital following her seizures, Silas spoke with Colonel Armstead, the Commander of the 66th Medical Group at Hanscom Air Force Base. Silas had gone to see Colonel Armstead because the Calhouns wanted Estella's follow-up care after discharge from Children's Hospital with a pediatrician other than the doctors at the Base Clinic and needed Colonel Armstead's permission to do so. Silas met with Colonel Armstead and discussed the events at the Base Clinic. Colonel Armstead indicated to Silas that he had already spoken to everybody at the Base Clinic. (Testimony of Silas Calhoun, Exhibit 2, at 90 - 91).

17. Silas set forth the contents of his discussion with Colonel Armstead in a letter dated March 14, 2000. The letter was signed and approved by Colonel Armstead. In pertinent

part, the letter states as follows:

> "As said by Dr. du Plessis, Neurosurgeon at Children's Hospital, Boston, MA, her severe medical condition was a direct result of dehydration. After talking with Dr. Coleman, head Pediatrician at the Hanscom Medical Clinic, Estella's dehydration could certainly have been avoided if her in-processing procedures were being conducted correctly for each of her visits at the Hanscom Clinic."

(Exhibit 0464, Testimony of Silas Calhoun, Exhibit 2, at 91 - 93).

The contents of this letter constitute an adoptive admission by the defendant.

II. THE DEFENDANT'S FAILURE TO APPRECIATE THE EXTENT OF ESTELLA'S DEHYDRATION IN A TIMELY FASHION PROXIMATELY CAUSED HER TO DEVELOP HYPERNATREMIA, AND THEN SUBSEQUENT INJURY TO HER BRAIN, INCLUDING SEIZURES, THROMBOSES AND BRAIN HEMORRHAGE. THE BRAIN INJURIES HAVE RESULTED IN BOTH COGNITIVE AND BEHAVIORIAL SEQUELAE, WHICH ARE ALSO CAUSALLY RELATED TO THE DEFENDANT'S NEGLIGENCE.

A. It Is Undisputed That Estella Was Extremely Dehydrated At The Time Of Admission To The Emerson Hospital On March 3rd, And That Various Signs And Symptoms Of Brain Injury, Including Seizures, Blood Clots And Hemorrhaging, Which Were Manifesting And Diagnosed During Estella's Admission To Children's Hospital Were Causally Related To The Defendant's Negligence.

1. Estella's sodium level at the time of her admission to Emerson Hospital on March 3 was 172, (which was extremely high as the upper limit of acceptable sodium is 145), and she was diagnosed at that time with severe hypernatremic dehydration. Hypernatremic dehydration is a lack of adequate fluid in the body, associated with a high level of sodium in the blood. The way the body compensates for the high level of blood sodium is to move water from inside cells into the blood stream to compensate for the high circulating sodium. This is particularly problematic in a newborn's brain, because if you take cells and they start shrinking as a result of

the water loss, it leads to venous stasis, a condition in which the blood in the vessels does not move properly, which then leads to clots (thromboses). A cascade of events occurs, resulting in hemorrhaging. (Wust-Smith at 34-37).

2. Dr. Edward Hart, an eminent pediatric neurologist who practices both at the Massachusetts General Hospital and at North Shore Children's Hospital,[1] further explained the consequences of hypernatremic dehydration as follows:

> There's a drive towards equalizing the osmotic content from inside the cells and into the extra cellular fluid.
>
> . . .
>
> In order to equalize that or lower the serum sodium . . . all the nerve cells actually, excrete water into the extracellular space so as to lower the serum sodium. In so doing, the cell itself shrinks, all the cells that is, shrink, and then a number of known and unknown processes take place.
>
> The cells manufacture molecules in an attempt to equalize the fluid, keep the fluid from leaving the cells and preserve the structure of the cells. So those molecules are manufactured, and the attempt then is to keep the fluid from continuing to excrete into the extracellular space.
>
> So the main mechanism is within each cell that takes place . . . not only do you have the shrinkage of the neurons of the nerve cells, but you have disruption of their processes, their metabolic processes, again some known factors and some unknown. So it's a diffuse process that takes place throughout the brain.
>
> What happens in a grosser sense is that the fluid leaving the cells makes the brain shrink. When the brain shrinks, it can pull away from the coverings of the brain, arachnoid and dura, and those coverings have blood vessels that run in and out of the brain, and sometimes when the brain shrinks those vessels are torn. So you get bleeding or hemorrhage.
>
> You also have a formation of clot or thrombi in the veins . . . So where there is this clotting of the blood in the veins, then the

[1] Dr. Hart has been named "Teacher of the Year" at Massachusetts General Hospital, twice in the last 5 years and lectures to post graduate students at Harvard Medical School on ADHD in adolescents. (Hart at 4, 40)

> pumping in of blood from the other side, the arterial side, makes the brain congested. So you get further disruption of cellular functions. . . .
>
> So there's a diffuse process, some of which can be seen grossly with clotting in the veins and tearing of blood vessels, and some of which is on a microscopic or sub-microscopic level throughout the brain. (emphasis added).

(Testimony of Edward Hart, at pp. 7-9, attached hereto as Exhibit 6).

3. Hypernatremic dehydration is known to put a baby at risk for either an intravascular bleed or thrombosis and an infant needs to be monitored for those conditions. (Sutton at 23) Pediatric residents are trained to be alert to the signs and symptoms of this condition in medical school. (Wust-Smith at 38) Therefore, the risk of hypernatremic dehydration was foreseeable in Estella's case.

4. Had Dr. Daub and the technician staff at the Base Clinic properly weighed Estella, they would have discovered that Estella had lost a significant amount of weight and would have been able to intervene before the hypernatremic dehydration either developed or became as severe as it did. (Wust-Smith at 49).

5. After Estella was rehydrated, she was discharged from Emerson Hospital on March 6, 2000. On March 9th, Emily Calhoun noticed that Estella was twitching on the left side. She then brought Estella back to the Base Clinic where she was seen by Dr. Russell Coleman. Dr. Coleman felt that the twitching was normal, that she was a "well child" and both Emily and Estella returned home from the Base Clinic that same morning. There were several additional incidents of twitching on the left side that continued throughout the day, and during the evening of March 9th. Silas and Emily were concerned and took Estella to Children's Hospital for evaluation. (Wust-Smith at 47-48; Exhibit 1, p. 0081; Emily Calhoun, Exhibit 2, at 31-32).

6. Upon admission to Children's Hospital in Boston, Estella was noted to be suffering from multiple seizures. These were focal seizures of the left arm, face and leg and were accompanied by multiple episodes of apnea, which is a cessation of breathing. Estella was given various medications to control the seizures, intubated and placed on a respirator to assist her breathing. Estella's seizures continued throughout the night on March 9 and early in the morning on March 10. A final seizure was noted to have occurred overnight on March 10. (Wust-Smith at 48-49; Hart at 10-11; Exhibit 1, pp. 0141-2, 0150, 0152, 0166).

7. Estella's attending physician at Children's Hospital, the Director of the Fetal-Neonatal Neurology Program, Dr. Adre du Plessis, noted on the morning of March 10th, that Estella was suffering from "neonatal encephalopathy with seizures of post-natal onset and associated with hypernatremic dehydration." (Exhibit 1, p. 0186). Encephalopathy reflects a diffuse dysfunction of brain processes. (Hart at 12).

8. On March 10th and 11th, Estella underwent first a CT Scan and then an MRI of the brain, which indicated:

a. An extensive venous thrombosis involving the superior sagital sinus, straight sinus, internal cerebral veins and right terminal vein;

b. A hemorrhage in the posterior horn of the right lateral ventricle; and

c. A small parenchymal [substance of the brain] hemorrhagic infarction within the right thalamus.

(Exhibit 1, pp. 0237A, 0237B).

9. On March 14th, a follow-up MRI determined that the venous thrombosis had progressed, but that the small hemorrhagic lesion in the thalamus was stable. (Exhibit 1, p. 0239).

10. As Dr. Hart testified, because Estella suffered brain shrinkage from the hypernatremic dehydration, there were diffuse cellular defects and metabolic abnormalities which took place all over her brain. In addition to the damage noted on the CT scan and MRIs, damage occurred to nerve functioning even though there was no actual physical finding of a death of tissue (infarction) large enough to show up on either a CT scan or MRI. Furthermore, Estella had recurrent seizures, during which, substances called excitotoxins were released which further injured the brain. There are many processes that take place in the midst of seizures and the resulting encephalopathy in addition to the bleeding that was noted on the CT scan and MRI. (Hart at 17, 20).

11. Dr. Hart summarized as follows:

> On a gross sense, the brain shrunk because all the cells had their fluid leaving to try to equalize the osmotic gradient in the blood in the extracellular space. [As a result], various blood vessels were torn resulting in bleeds.
>
> Along with that, there were clots formed within the veins which adds to further congestion and abnormal metabolism within the brain. Some of that showed on an MRI. Some of that could be implied from the clinical findings of encephalopathy and the diffuse – for example, abnormalities in the lower extremity reflexes, these all would point to other areas of the brain being involved.
>
> And then the baby had seizures, which are abnormal electrical discharges with activation of the underlying brain, primarily from the right hemisphere, frontal presumably more than thalamus because the motor system is more frontal, although thalamus is involved in all back and forth sending of messages up and down the brain.

(Hart at 22-23).

12. The defendants offered no evidence whatsoever to rebut the direct causal link between Estella's hypernatremic dehydration and the ensuing seizures, clots and hemorrhages

and failed to suggest any alternative explanation for her brain injuries.

B. The Brain Injuries That Estella Suffered As A Result Of The Dehydration Were A Substantial Factor In Causing Her Behavioral Problems, Which Are Substantially Likely To Adversely Affect Estella's Functioning Academically And Socially.

1. During Estella's admission to Children's Hospital, Dr. du Plessis explained Estella's brain injury to Silas and Emily and indicated that Estella may have long-term disabilities including learning disabilities. (Testimony of Silas and Emily Calhoun, Exhibit 2, at 33-34, 97-98).

2. After discharge from Children's Hospital in March 2000, Estella was monitored by a pediatrician, early intervention services, and periodically by Dr. du Plessis.

3. For the first several months of her life, Estella reached all developmental milestones and none of her doctors noticed any abnormal neurological signs or symptoms. After Estella began to walk at the age of 10 months, she was seen again by Dr. du Plessis on March 28, 2001, when she was approximately 13 months old. At that time, Dr. du Plessis noted that she had a normal neurological examination "except for very mild posturing of the left upper extremity with running and walking fast, that is likely a result of the right thalamic hemorrhage in the newborn period." (Exhibit 1, pp. 0291-0292)

4. Over the course of the next few months, Estella began to have social interactions with other children, and at approximately age 20 months, Emily noted that Estella was displaying a very high energy level. She ran everywhere and she would yell and scream. She became aggressive toward other children and would hit others with objects and with her hands. After her infant brother, Cy Henry was born, Estella would try to pull him off other people's laps when he was being held. On one occasion, when he was about one month old, Estella scratched Cy

Henry's face with a fork. (Emily Calhoun, at 37-38; Testimony of Dr. Todd Elwyn at pp.16,17, attached hereto as Exhibit 7; Exhibit 1, pp. 0247-0250).

5. In September, 2002, when Estella was approximately 2 years, 9 months old, she started attending pre-school at the Church of the Redeemer in Chestnut Hill, Massachusetts. Estella's pre-school teacher, who is also the Director of the School, was Judith Burnim, Estella's maternal grandmother. Ms. Burnim noticed various behavioral problems – Estella was very impulsive, very fidgety, always chewing on her clothing or her hair. She was aggressive towards other children and would have to be removed from the classroom. Ms. Burnim indicated that Estella would approach other children and grab whatever they had or push them over. It was very difficult to put her in a "timeout" when she was disruptive because either she would not pay attention to the timeout or just continue to be even more disruptive or she would even become so upset that she would vomit. (Testimony of Judith Burnim at pp. 4-6, attached hereto as Exhibit 8).

6. As a result of these behaviors, Emily Calhoun requested renewed early intervention services, and on March 23, 2003, was evaluated by Judy King, an early childhood special educator. Ms. King also observed Estella running back and forth across the room, running in circles, shaking her head from side to side while playing alone, hitting her brother, and not complying when her mother attempted to discipline her. Ms. King observed that Estella had difficulty modulating sensory input, which impacted Estella's ability to attend to a task, and recommended occupational therapy. (Exhibit 1, pp. 0325-0326; Elwyn at 21-24)

7. One week later, on April 1st, Estella was evaluated by Kerri Colantuno, an occupational therapist at Children's Hospital, Boston. The evaluation noted that Estella demonstrated tactile, auditory, visual and olfactory sensitivities and listed several abnormal

behaviors, including, among other things, sensitivity toward playing with messy things, various clothing preferences, constant chewing on various objects, difficulty bathing, etc. (Exhibit 1, pp. 0247-0250; Elwyn at 25-26)

8. During the same time period, Estella was again seen by Dr. du Plessis on March 26, 2003. Dr. du Plessis, who had not seen Estella since March 2001, when she had just started walking, noted in 2003 that Estella had now developed behavioral difficulties with aggression, impulsiveness and emotional instability over the course of the prior year, and that she was considered hyperactive with a decreased concentration span. Dr. du Plessis noted significant concerns about Estella's behavior, attention span and issues that may impact her education, which were out of his area of expertise and referred Estella to the Behavioral Neurology Department at Children's Hospital, Boston. (Exhibit 1, p. 0293a)

9. On April 28, 2003, Estella was evaluated by Dr. David K. Urion, the attending physician in Behavioral Neurology, and Dr. Reet K. Sidhu, a fellow in Behavioral Neurology. Behavioral neurologists deal with the clinical aspects of the effects of neural processes on mental states, including cognition, emotional status, and social behavior. The report notes Estella's history of brain injury and in particular, the hemorrhage in the right thalamus in the newborn period, and the history of behavioral problems that were noted by Emily Calhoun at around age 20 months. Dr. Urion and Dr. Sidhu also noted Estella's history at preschool and with Early Intervention Services, and also Estella's ongoing medical history as detailed in Dr. du Plessis' notes.

Dr. Urion and Dr. Sidhu indicated that the family history revealed that there were no members of the family with attention or hyperactivity disorders, and that there was no family history of seizures, autism, developmental delay or mental retardation.

Estella's examination was unremarkable and no neurological abnormalities were found. In summarizing their evaluation, Dr. Urion and Dr. Sidhu stated:

> "Estella is a 3-year old girl with a history of an extensive dural vein thrombosis, and subsequent hemorrhagic thalamic infarction in the newborn period. She has been doing rather well since that time with appropriate development. At this point, she has several behavioral issues related to impulsivity, inattention and hyperactivity that are often seen in children with this history of neurological injury." (emphasis added)

(Exhibit 1, pp. 0251-0254)

10. Dr. Hart agreed with the conclusion of Drs. Urion and Sidhu and testified that the kinds of deficits and behavioral problems that Estella was displaying are well described after effects of neurological injury in children, newborns and older children. (Hart at 26).

11. Silas was reassigned to Hawaii, and the family moved during the summer of 2003. They began living at the Schofield barracks on the Island of Oahu. Because of her neurological history and also because of the behavioral concerns that had been documented, Estella was evaluated by the Child Study Group, a team of various specialists. As part of this evaluation, Estella was also seen by a child psychiatrist, Dr. Megan Marumoto, in September 2003. Dr. Marumoto observed Estella to be easily distracted and impulsive and found that Estella had Attention Deficit Hyperactivity Disorder (ADHD) features of distractibility and impulsivity. (Exhibit 1, p. 0419).

12. Following this evaluation, Estella received occupational therapy through Project Assist, and was assessed as having moderate to severe sensory processing difficulties that dramatically affected her ability to explore and perform many self-care tasks and age appropriate play skills. (Exhibit 1, p. 0430).

13. During the same period of time, Estella also was evaluated by the Hawaii

Department of Education to determine whether she was eligible for special education services. In August of 2003, Estella underwent IQ and other testing. Estella was found eligible for special education services under the category of emotional disturbances due to exhibiting aggressive behaviors, being difficult to discipline and having sensitivity issues, and was placed in a fully self-contained special education pre-school class to address these concerns. (Elwyn at 33-36, Exhibit 1, p. 0370).

14. In October of 2003, Estella's pre-school teacher, Marjorie Kim completed a "Conners' Teacher Rating Scale" a form that asks the teacher to evaluate various criteria for ADHD. Ms. Kim assessed Estella as exhibiting the following behaviors very often: inattentive or easily distracted, defiant, restless in the squirming sense, disturbing other children, actively defying or refusing to comply with adults' requests, always on the go or acting as if driven by a motor, having difficulty remaining still, fidgeting with her hands and feet, squirming in her seat, leaving her seat in situations in which remaining seated was expected, having a short attention span, arguing with adults, only paying attention to things she was really interested in, having difficulty waiting her turn, having distractibility or attention span that was a problem, having temper outbursts, running or climbing excessively in situations that were inappropriate, interrupting or intruding on others, having difficulty playing or engaging in leisure activities quietly. She was excitable or impulsive, and she was always restless or always up and on the go. Ms. Kim felt that Estella was also often: spiteful or vindictive and that she failed to finish things she started and did not follow through on instructions or failed to follow through on school work.(emphasis added) (Elwyn at 37-38; Exhibit 1, pp. 0370, 0382).

15. The following year in October 2004, Estella was again evaluated to determine whether she could continue receiving special education services in pre-school. Estella was found

to be more aware and in control of her behavior, but when she was around children who were active and excitable, she would follow their lead and become very active and impulsive. The assessment found that Estella's behavior problems impacted on her ability to function in age appropriate environments. (Exhibit 1, p. 0384; Elwyn at 40-41).

16. In April 2005, she was once again evaluated pursuant to an Individual Education Plan (IEP), which is used for placement in special education services, and was found to demonstrate appropriate behavior but only in a small class, and when a special education teacher was present to monitor her behavior. (Elwyn at 41, 42, Exhibit 1, p. 0401). The IEP recommended that she remain in a fully self-contained special education class through the end of the 2004-2005 school year in order to address behavioral concerns. (Exhibit 1, p. 0404).

17. Estella began kindergarten in July of 2005. Her teachers, Mrs. Greenamyer and a substitute, Mrs. Heatherington, provided a highly structured class environment during the kindergarten year. Although Estella was reportedly doing better behaviorally in kindergarten, monitoring forms filled out in August and November, 2005 continued to indicate that Estella was only sometimes able to listen to instructions, and follow directions in terms of her academics, and sometimes displayed responsible behavior socially. (emphasis added) (Exhibit 1, pp. 0436, 0437).

18. In October, 2005, Estella was evaluated by Dr. Pedersen, a pediatric neurologist. Dr. Pedersen noted during his examination that Estella was fidgeting during the office visit, and often changed her position in her seat. He also observed her to be sitting on her knees, then facing backwards, and at one point, leaning over with her hands on the ground so that she was almost upside down on her chair. Dr. Pedersen noted her history of brain injury secondary to dehydration as a neonate and indicated that although her neurologic exam was normal in detail,

"by history it sounds as if she has some ADHD symptoms with impulsivity, inattentiveness and also some hyperactivity." (Exhibit 1, pp. 0346-0347).

19. Beginning in the summer of 2006, Estella entered 1st grade, and at first was not receiving any special education services. During the course of 1st grade Estella has been displaying numerous academic and behavioral problems. A progress report for the first quarter indicated she was only making limited progress in most areas of language arts and mathematics. (Exhibit 1, p. 0447) The teacher comments for both the 1st and 2nd quarter indicate that Estella is often loud and silly in class, and that she continued to need reminders about controlling herself (excessive talking and laughing) in class, as this can be disruptive and interfere with her getting work done. (Exhibit 1, p. 0448)

20. A Vanderbilt ADHD Diagnostic Teacher Rating Scale filled out by her teacher, Ms. Yamanaka, indicated that Estella very often: has difficulty sustaining attention to task or activities, is easily distracted by extraneous stimuli, talks excessively, blurts out answers before questions have been completed, has difficulty waiting in line, and interrupts or intrudes on others. (emphasis added) Mrs. Yamanaka found that Estella also often: failed to give attention to details or made careless mistakes in school work, had difficulty playing or engaging in leisure activities quietly, and loses her temper. (emphasis added) Mrs. Yamanaka felt that Estella's academic performance was "problematic," particularly in reading and mathematics. Estella's classroom behavioral performance was also problematic, and in particular, her relationships with peers, following directions/rules and disrupting the class. (Exhibit 1, pp. 0457-0458).

21. Estella also performed poorly on a standardized test called STAR Math, administered on December 12, 2006 (6th percentile), and then again on March 14, 2007, (5th percentile). Her March 14 score has the grade equivalent of the fourth month of kindergarten,

and accordingly, she is well over a year behind in her math abilities. (Exhibit 1, p. 0459).

22. Estella has also taken another standardized test called the STAR Early Literacy Test, three times, in August 2006, December 2006, and March 2007. Her scores have improved over time, as she was designated as an "emergent reader" based on the scores of the August and December testing, and is now designated as a transitional reader, based on the scores of the March 2007 testing. During the period of time that Estella has shown improvement on this testing, she has been receiving reading tutoring in school at the recommendation of Mrs. Yamanaka. The tutoring in reading is continuing. (Exhibit 1, pp. 0450, 0460, Emily Calhoun, Exhibit 2, at 58).

23. Estella also has behavioral problems at home. Estella becomes more hyperactive after school, especially if she engages in some physical activity, like jumping on the trampoline. Emily observes that Estella plays roughly with her dolls, hits them and bangs them on the table while saying "I hate you." She frequently will not listen to what Emily says. She will also take out scissors and cut things with them randomly, and will use markers in places where she is not supposed to. Emily Calhoun reported, on a Vanderbilt Rating Form submitted to her by Dr. Elwyn, that Estella often has difficulty with fidgeting or squirming in her seat, acting as if driven by a motor, losing things necessary for tasks or activities, blurting out answers before questions have been completed and is easily distracted. Estella also often had trouble waiting her turn, talked too much, avoided tasks that require sustained mental effort, has trouble playing quietly, does not follow through on instructions, runs about at inappropriate times, does not seem to listen when spoken to directly, leaves her seat when she is not supposed to, and has difficulty sustaining attention to tasks or play activities. (Elwyn at 57-59).

24. Emily also reported that Estella is often loud and likes to test limits, and that when

she was angry she has threatened Emily and talks back to both Emily and Silas. She often lost her temper, was defiant or refused to go along with her parents' requests, deliberately annoyed people, was touchy or easily annoyed, was bullying or intimidating others, and lied to get out of trouble or avoid obligations. (Elwyn at 59)

25. According to Emily, it is hard to discipline Estella because she doesn't care about consequences. She talks back, she is aggressive and she doesn't hesitate to grab or hit Emily. (Emily Calhoun, Exhibit 2, at 58).

26. Estella meets the recognized diagnostic criteria, per DSM-IV, for Attention Deficit/Hyperactivity Disorder, predominantly hyperactive-impulsive type. (Elwyn at 68-73; Hart at 34).

27. Dr. Hart testified that the neurological insult that Estella suffered in the first two weeks of life is a substantial contributing factor to the current behavioral dysfunctions which have been enumerated and, for "want of a better term," been labeled ADHD. (Hart at 35).

28. As Dr. Hart elaborated, research, including his own, over the past several decades has indicated that injury to the brain can result in behavioral differences, particularly disinhibition, distractibility and impulsivity, in children. Although for a majority of children with ADHD the etiology of the behaviors is genetic, that does not negate the foundations of the observations that led to the whole understanding of the entity [ADHD], which is that it can be an effect of brain injury. As Dr. Hart testified:

> I was in a rehab hospital for 20 years. I mean I saw plenty of brain injuries and the effects often are just that, even in the absence of a definite IQ difference, you can see disinhibition and distractibility and impulsivity.

(Hart at 35, 38-40).

29. Dr. Hart emphasized that it is not localized findings which are diagnostic of Estella's injury but rather the encephalopathy that was described from the beginning and that we know would have taken place on the basis of the metabolic changes that occur with hypernatremia and with seizures. Because we are talking about behavior, the understanding from current research is that more significant than a single lesion, is the effect of the brain injury on various "neuro networks" or brain circuitry which modulate behavior and resist impulsivity. (Hart at 38-45).

30. Dr. Todd Elwyn also opined that Estella's neonatal injuries were a substantial contributing factor in causing her ADHD. The basis for Dr. Elwyn's opinion was:

a. That everyone who had evaluated the child had expressed concerns about the neonatal injuries and, in particular, Dr. Urion, the behavioral neurologist, felt that the kinds of symptoms that Estella exhibited were consistent with a child who had suffered this kind of brain injury.

b. It was his own understanding, based on review of the literature, that children who experienced intraventricular hemorrhage were at increased risk for ADHD.

c. The infarction to the right thalamus would also place her at risk for developing ADHD, because the thalamus is involved intimately in the neurocircuitry that sustains attention and suppresses things that compete for our attention, and a stroke in that area could be quite significant.

d. ADHD is a highly genetically linked disorder, and that there was no family history on either side that suggested there was ADHD present for either parent.

Dr. Elwyn noted that when you do not have genetic links, one must look to other biological causes that are specific to the individual person that may be causative of the condition. Those things like use of drugs or alcohol by the mother during pregnancy, tobacco smoking during the pregnancy, various problems with the birth, things of that nature, all of those were absent. Indeed, there were no biologically based contributing factors that Dr. Elwyn could find

other than the significant brain injury she suffered as a neonate.

(Elwyn at 73-78).

31. According to Dr. Elwyn, Estella also met the criteria for Oppositional Defiant Disorder (ODD), per DSM-IV, which consisted of a pattern of negativistic, hostile and defiant behavior. The basis for that opinion was that Estella is oppositional, she is defiant and she argues with her parents, she refuses to do things and she talks back to them. She does things that are against the rules, doesn't want to accept the consequences of discipline, is touchy or easily annoyed, and loses her temper fairly easily. (Elwyn at 79-80).

32. Dr. Elwyn opined that in an individual who has ADHD, it is very common to find the presence of a disruptive behavior disorder, including ODD. (Elwyn at 81-82).

33. Dr. Elwyn specifically addressed whether there was anything about the relationship between Estella and her parents, Emily and Silas Calhoun, that could have either caused Estella's ADHD or her ODD. Dr. Elwyn opined that ADHD is a neurological disorder and is highly biologically based, and that there is no convincing psychosocial explanation that has been demonstrated. Absent some pathological treatment by the parents, "you just don't really see it [psychosocial factors triggering ADHD] very often in kids", and that he did not find it in this case. (Elwyn at 82-83).

Dr. Elwyn testified that there could be parent/child dynamics in the Calhoun family that are having an effect on her condition and particularly her ODD. Dr. Elwyn noted that when a child suffers a significant medical condition, whether cancer or some other condition, the parents' perception of the child is altered. The child is seen as a kind of a fragile entity. Such an event can affect the parenting style and the interactions between parent and child, and can cause the parents to go overboard in not wanting to do anything that might harm the child in terms of

being overly strict. Dr. Elwyn felt that it was possible that Silas and Emily have such a perception of Estella, but that in any event, the neurological injury that Estella suffered as an infant is an important contributing factor to the develop of ODD, both because of the biological factors that may impact upon her development and "what going through that sort of thing with a child does to your relationship with a child." (Elwyn at 85-86).

With respect to Silas Calhoun's deployment to Iraq, Dr. Elwyn opined that Estella was already exhibiting significant behaviors prior to Silas' deployment. It would not be reasonable to say that the deployment caused the ADHD; on the other hand, his deployment put extra burdens on Emily and this could affect the parenting relationship. (Elwyn at 86).

34. Dr. Hart made it clear that there was nothing that emerged from his interview with Silas and Emily Calhoun that might imply that Estella's behavioral problems had a genetic etiology, nor did his examination reveal any dysmorphic features or chromosomal abnormalities. According to Dr. Hart, there is general agreement in the literature that ADHD is a neurobiological disorder that is not caused by family stressors such as a major move or the absence of a parent. Dr. Hart had actually done a well baby clinic at Hanscom Air Force Base in 1965 and was aware of the stressors that military families can be under and testified that this is not enough to explain Estella's dysfunction. Life stressors can cause inattentiveness but they are usually episodic rather than a persistent finding such as exists in Estella's case. (Hart at 50-51, 53-55).

C. In Addition To Her Behavioral Problems, Estella Also Has Cognitive Deficits, Which Are Causally Related To Her Brain Injury Suffered During The Neonatal Period, And Which Are Impairing Her Academic Functioning.

1. Testing done pursuant to the evaluation for special education services when the

family first came to Hawaii in August 2003, indicated that Estella demonstrated a significant weakness in "visual alertness and her matching/copying skills." (Exhibit 1, p. 0363) More detailed neuropsychological testing, designed to reveal cognitive deficits even in the absence of gross neurological deficits, was administered by Dr. Douglas Whiteside in May 2006. The testing again indicated deficits with visual motor functioning, and specifically integrating visual spatial abilities. Estella's ability to perceive visual stimuli, such as a drawing, and being able to integrate a motor response, i.e., a drawing task, was impaired (5^{th} percentile). (Testimony of Dr Douglas Whiteside at 8-9, 15-16, attached hereto as Exhibit 9).

2. Children with visual processing deficits have difficulty accurately perceiving and integrating visual information and can have a variety of related problems, commonly with mathematics. Dr. Whiteside testified that more probably than not, Estella's visual processing deficit was currently affecting her academic functioning in math at the present time. (Whiteside at 18, 27-28) And furthermore that she was also at substantial risk for difficulties with reading and at picking up social cues because of her visual processing impairment. (Whiteside at 19, 21, 29).

3. Dr. Whiteside opined that Estella's early neurological injuries were a substantial contributing factor in the development of her neurocognitive deficits. He testified that an extensive body of research literature demonstrates that the sorts of lesions Estella suffered, whether called a hemorrhage or an infarct or a seizure, affecting the right cerebral hemisphere, cause various problems with processing visual information, and that is exactly the pattern that occurred with Estella. (Whiteside at 33-34).

D. The Testimony Of The Defendant's Causation Experts, Dr. Yim And Dr. Prince Was Not Credible And Was Contradicted By Well Recognized Authorities On ADHD.

1. Dr. Yim's testimony concerning the lack of causation between Estella's brain injuries and Estella's behavioral sequelae, including her ADHD is not credible, and his testimony was contradicted by Estella's treating physician, Dr. Urion, the plaintiff's experts, Drs. Hart and Elwyn, other well recognized authorities in the field of ADHD research, and even by the defendant's psychiatric expert, Dr. Jefferson Prince.

a. Dr. Yim testified that if Estella had sustained a significant neurological injury that there would not be any lag in the onset of symptoms and rather, symptoms and problems would manifest close to the time of injury and continue. (Testimony of Dr. Gregory Yim, attached hereto as Exhibit 10 at pp. 23-24). However, the evidence shows rather that Estella's symptoms manifested gradually as she entered various developmental stages. For instance, according to Dr. du Plessis on March 28, 2001, at the age of 13 months, Estella displayed mild posturing of the left upper extremity with running and walking fast that is "likely a result of the right thalamic hemorrhage in the newborn period." Estella had just started walking and so this finding had never been seen before. (Yim at 24-26).

b. After Estella was old enough to start interacting more with her peers in a pre-school environment, she started to manifest behavioral issues. She was referred to Dr. Urion, the consultant in behavioral neurology at Children's Hospital who opined in April of 2003 that although Estella had been doing well since her neonatal injury, specifically the thromboses and thalamic hemorrhage infarction on the right side, and had appropriate development, at that point in time, had "several behavioral issues related to impulsivity, inattention and hyper-activity that are often seen in children with this history of neurological injury."

Dr. Yim disagreed with Dr. Urion's assessment and, in questioning directed to Dr. Yim by the Court, at the conclusion of his testimony, Dr. Yim testified as follows:

Q. Is it your position that the type of injury suffered by Estella Calhoun could never cause ADHD, or it did not cause ADHD in her case?

A. In her case, Sir, I would say that it could never cause it because it's on the wrong side of the brain. [Yim opined that the injury would have to be on the left side]. (Yim, Exhibit 10 at 73).

c. Dr. Yim testified using a specially prepared diagram of the brain, that only the frontal cortex was causally implicated in the development of ADHD, and that the thalamus bore no connection to the abnormal behaviors associated with ADHD. He asserted that the thalamus was involved in relaying "peripheral sensory information, such as pain and temperature" and was anatomically "very far away" from the frontal lobes and thus, Estella's small hemorrhage in the right thalamus was of no consequence to this case. (Yim, Exhibit 10 at pp. 145-146, 159, 50-51).

Dr. Hart had testified to the contrary, that the thalamus is a "central way station" in the brain and receives information from the cortex and other parts of the brain, processes the information and then sends it back out to the cortex and into other areas in the brain. The thalamus, according to Dr. Hart, is involved in programming and organizing behaviors. (Hart at 16). Similarly, Dr. Elwyn testified that the thalamus is involved intimately in the neuro-circuitry that sustains attention and suppresses things that complete for our attention. (Elwyn at p. 76).

Dr. Yim was confronted with an authoritative article written by, among others, Dr. Joseph Biederman of the Massachusetts General Hospital, Attention Deficit Hyperactivity Disorder: Diagnosis, Lifespan, Co-Morbidities and Neurobiology. This article was published in 2006. The authors expressly implicate the thalamus in the regulation of behavior and directly

contradict Dr. Yim's testimony as follows:

> Brain imaging studies fit well with the concept that dysfunction in fronto-subcortical pathways occurs in ADHD. Three sub-cortical structures implicated by the imaging studies (i.e., caudate, putamen and globus pallidus) are part of the neural circuitry underlying motor control, executive functions, inhibition of behavior and the modulation of reward pathways. These frontal-striatal-pallidal-thalamic circuits provide feedback to the cortex for the regulation of behavior. (emphasis added)
>
> The fronto-subcortical systems pathways associated with ADHD are rich in catecholamines [including dopamine] which were involved in the mechanism of action of stimulant medications used to treat this disorder. A plausible model for the affects of medications in ADHD suggested that, through dopaminergic and/or noradrenergic pathways, these agents increase the inhibitory incidences of frontal cortical activity on subcortical structures.
>
> Imaging studies also implicate the cerebellum and corpus callosum in the pathophysiology of ADHD. The cerebellum contributes significantly to cognitive functioning, presumably through cerebellar-cortical pathways involving the pons and thalamus. (emphasis added)

(Exhibit 10 at 52-54)

Dr. Yim was also confronted with a text published in 2006 entitled "Attention-Deficit Hyperactivity Disorder, a Handbook for Diagnosis and Treatment" by one of the leading researchers and clinicians in the field, Dr. Russell A. Barkley. Discussing the neurological studies done over the past two decades concerning the neurodevelopmental origin of ADHD, Dr. Barkley states as follows:

> Others reviewing this literature over the last two decades have reached similar conclusions – namely, that abnormalities in the development of the frontal-striatal cerebellar regions probably underlie the development of ADHD… . These regions are shown in Figure 5.1.

(Exhibit 10 at 55-57) (Figure 5.1, attached hereto as Exhibit 11, shows the

diagram of the human brain indicating the right hemisphere and particularly the location of the striatus, globus pallidus, and the thalamus). (emphasis added).

These descriptions by these authoritative researchers and clinicians are consistent with the testimony of both Dr. Hart and Dr. Elwyn that complex neuro networks/neurocircuity are implicated in ADHD, as opposed to the simplistic and deliberately inaccurate description proffered by Dr. Yim.

2. Dr. Prince's testimony was inconsistent with Dr. Yim's. Dr. Prince agreed that inattention, hyper-activity and impulsivity is seen in children who have neurological injury and did not agree with Dr. Yim's opinion that "the kinds of injuries Estella suffered could never cause her problems." Dr. Prince further testified that "it is impossible to not connect her early neonatal events to her current symptoms" but that family and social factors are better explanations for the current symptoms that she is experiencing. (Prince, Exhibit 12 at 78, 119-120). In particular, Dr. Prince attributed Estella's behavioral and learning problems, in large part, to the severe emotional distress sustained by Emily and Silas in dealing with the events of Estella's infancy and in particular, the life threatening hospitalizations at both Emerson and Children's Hospitals. Dr. Prince testified that the most important factors in an infant's development are bonding and attachment to the parents. Estella and Emily had a very distressing, stressful time during this early period in Estella's life and there was a lot of anxiety. As a result, Dr. Prince felt that Estella developed a "sort of anxious type of attachment" and that "she is very prone to stress." (Prince at 86, 98-99). Dr. Prince also opined that other psychosocial factors including the family's move to Hawaii, and Silas' deployment to Iraq also exacerbated the patterns of anxiety and stress and led to her development of ADHD.

Dr. Prince's testimony that psychosocial factors were causative of Estella's ADHD was,

as noted above, directly rejected by Drs. Elwyn and Hart. The current state of medical science considers ADHD to be neurobiological in origin and the following statement made by Dr. Russell Barkley in his book on ADHD referenced above was read into evidence:

> Just as important is the fact that in the past decade, no credible social-environmental theory, or even hypothesis concerning causation in ADHD has been developed that either is consistent with the known scientific findings on the disorder, or has any explanatory or predictive value for understanding the disorder and driving further scientific research in testing it (i.e., falsifiability). And given what is now known, nor could there be, because studies of twins and families have made it abundantly clear that the majority of variation in the behavioral traits constituting ADHD is the result of genetic factors. What little variation remains is best explained by unique events that befall the individual child, often prenatally, and are not shared by other family members. Those events include biological (non-genetic) hazards that cause neurological injury, such as alcohol and tobacco exposure during pregnancy, premature delivery (especially with minor brain hemorrhaging), early lead poisoning, stroke and frank brain trauma to name just a few. (emphasis added).

(Exhibit 10 at 57-58).

Various physicians who have evaluated Estella, including Dr. Urion, Dr. Marumoto, and Dr. Pedersen, moreover, have investigated and consistently ruled out genetic, social or environmental factors as contributing to Estella's behavioral problems. Neither Silas nor Emily had any learning disabilities or behavioral problems during the course of their elementary or high school years. Both of them graduated from college and Silas has a highly complex job managing military computer networks. There are no known relatives on either side with any history of learning disability or behavioral problems. (Exhibit 2 at 12-15, 80-85). There is no history of prenatal, perinatal or postnatal injury or disease process (other than the injuries sustained by the dehydration) affecting either Emily or Estella. There is no history of abuse or violence in the

family. On the contrary, the evidence indicates that the Calhouns are an intact and very close family who have cared deeply and diligently for Estella.

To the extent that Dr. Prince's testimony can be credited, it actually provides additional evidentiary support for plaintiff's contention that Estella's behavioral problems are causally related to the defendant's conduct. The defendant's negligence in failing to appreciate Estella's weight loss and dehydration proximately caused Estella's hypernatremia and subsequent brain injury. Accordingly, the emotional effects of those injuries, including any disruptions in the parent/child relationship between Emily, Silas and Estella are also causally related. That is, the defendant's negligence significantly contributed to the "stressful" and "anxious type of attachment" that developed in the family and that was causative, according to Dr. Prince, of Estella's current behavioral problems. (See also Dr. Elwyn's testimony noted above at 85-86).

III. BECAUSE THE DEFENDANT'S NEGLIGENCE PROXIMATELY CAUSED ESTELLA'S NEO-NATAL INJURIES AND SUBSEQUENT BEHAVIORAL AND COGNITIVE SEQUELAE, ESTELLA CALHOUN, AS WELL AS SILAS AND EMILY CALHOUN ARE ENTITLED TO SUBSTANTIAL DAMAGES

A. The Cognitive And Behavioral Sequelae From Which Estella Is Suffering As A Result Of Her Hypernatremic Dehydration And Subsequent Brain Injuries Will Likely Persist Through Her Adolescence And Beyond.

1. Estella's cognitive deficit, and in particular, her visual motor processing deficit, is already most likely affecting her academic performance, particularly in math. She is well below grade level and does not seem to be making any improvement. According to Dr. Whiteside, this is a trend that is quite worrisome and will most likely persist, especially if she does not receive additional supports academically. (Whiteside at 26-28).

2. According to Dr. Elwyn, Estella's ADHD is also already affecting her academic

performance. Her school records, especially those of Mrs. Yamanaka in first grade, clearly indicate that there is a relationship between how she is doing academically and her behavioral symptoms. Because Estella has displayed these behavioral symptoms from an early age, the chronicity of her condition makes it less likely to remit and that, therefore, there is a substantial likelihood that she will continue to have academic problems. (Elwyn at 54, 55).

3. Studies show that between 60 and 80% of children with ADHD continue to have it into adolescence and between 46 to 66% of those individuals continue with it into adulthood. (Elwyn at 94-95). Particularly, in academics, the problems are likely to persist, because as the academic demands become more difficult and rigorous, children such as Estella with ADHD are less likely to succeed in school, are more likely to fail and more likely to repeat grades. (Elwyn at 95, 96).

4. In adulthood, the problem seen in the school environment transfers to the work environment. Studies show that adults with ADHD are more likely to change jobs more frequently, and more likely to underperform and not have the success that they would otherwise have in the workplace. They are more likely to be fired. (Elwyn at 96).

5. Other risks for children with ADHD such as Estella are that they are more likely to suffer physical injury from climbing about, etc., and that persists. Over time, studies show that people with ADHD have poor driving records, including more tickets issued and they are more likely to be involved in motor vehicle accidents. (Elwyn at 96-97).

6. Children with ADHD, such as Estella, are more likely to suffer socially, i.e., a peer who is always bothering you or always interrupting your conversations tends to be less popular. When children with ADHD get older, they have more relationship problems. They are more likely to have had sexual relations at an early age, so it puts them at increased risk for

pregnancy and sexually transmitted diseases. They are more likely to have a greater number of relationships and, therefore, are more likely to have divorce as part of their marital situation. (Elwyn at 97).

7. Dr. Hart was most concerned about Estella's patience, her ability to stick to tasks, and to form relationships. According to Dr. Hart the issues for Estella's future are not so much "jumping around" (hyperactivity) as they are the "inner restlessness." As Dr. Hart noted, as the tasks requiring inferential reasoning, problem solving and organizational skills become more complex for Estella there will be problems over time. (Hart at 40, 43-44).

8. Dr. Whiteside also indicated that the cognitive visual processing deficit also affects a child's social development. A child who is having difficulty like Estella with visual processing, will have difficulty picking up visual social cues. (Whiteside at 19, 29).

9. Contrary to the opinions of the defendants' experts, there is no evidence that Estella's behavioral problems are resolving, and indeed, she clearly meets criteria under the DSM -IV for Attention Deficit Hyperactivity Disorder.

B. As A Result Of The Defendant's Negligence And Resulting Injuries To Estella, Both Silas And Emily Calhoun Suffered A Loss Of Consortium And Are Entitled To Substantial Damages.

1. The emotional testimony of both Emily and Silas recounted the effects that Estella's injuries have had on them and how it has altered the course of their lives. Estella was the first born child of Silas and Emily, and she was born as a robust and healthy child, with no significant medical or neurological deficit. It is reasonable to infer that she would have grown and developed as a healthy, well adjusted child. Because of the defendants' negligence, Silas and Emily lost the attributes of normal consortium in their relationship with Estella that they would have reasonably and most likely enjoyed absent the defendants' negligence.

RULINGS OF LAW

1. The defendant owed Estella Calhoun a duty to exercise the degree of care and skill of the average qualified physician/health provider practicing in the area of pediatrics.

The plaintiff does not need to prove that the defendant was negligent in every respect. If any aspect of the defendant's care of Estella Calhoun was not in accordance with good and accepted pediatric practice, and such deviation caused harm to Estella Calhoun, then liability against the defendant is warranted.

Authorities

Albee v. Glesmann, 23 Mass. App. Ct. 972, 974 (1987), further app. rev. den'd, 399 Mass. 1104 (1987); *Berardi v. Menicks*, 340 Mass. 396 (1960); *Borysewicz v. Dineen*, 302 Mass. 462 (1939); *Vartanian v. Berman*, 311 Mass. 249 (1942); *Cusher v. Turner*, 22 Mass. App. Ct. 491 (1986); *Goldstein v. Gontarz*, 364 Mass. 800, 805 (1974); *Kane v. Fields Corner Grille, Inc.*, 341 Mass. 640, 642 (1961); *Goldstein v. Gontarz*, 364 Mass. 800, 807 n. 7 (1974).

2. If you find that the defendant was negligent in any respect, then you should find that defendant liable to Estella Calhoun if you also find that that defendant's negligence was a proximate cause of her harm. You may find that a defendant's negligence was a proximate cause of harm to the plaintiff if you find that the defendant's failure to act in accordance with good and accepted medical practice was a substantial contributing factor in producing harm to Estella Calhoun.

Harm is proximately caused by an act or failure to act, whenever it appears from the evidence in the case that the act, or failure to act, played a substantial part in bringing about or actually causing the harm or damage, and the harm or damage was either the direct result or a reasonably probable consequence of the act or failure to act.

Where the relation of cause and effect between two facts has to be proved, the testimony of a medical expert is sufficient to show that such a relation exists or probably exists. When a physician's expert testimony is required, it is not necessary for the physician to testify to an absolute medical certainty that the actions or omissions of the defendant caused the harm. In this case, it is sufficient for the plaintiff to establish, through expert testimony, that to a reasonable degree of medical probability, the actions or omissions of a defendant caused or contributed to the delay in diagnosing the plaintiff's hypernatremic dehydration.

The plaintiff is not required to show the exact cause of her harm or to exclude all possibility that the harm resulted without fault on the part of a defendant. It is enough that the harm was more likely than not due to the negligence of the defendant than to some other cause.

Authorities

O'Connor V. Raymark Indus., Inc., 401 Mass. 586, 591 (1988); *Furtado v. Bishop*, 604 F.2d 80 (1st Cir. 1979), cert. denied, 444 U.S. 1035 (1980); *Teasdale v. Beacon Oil Co.*, 266 Mass. 25, 27-28 (1929); *Cusher v. Turner*, 22 Mass. App. Ct. 491, 498 (1986); *Delicata v. Bourlesses*, 9 Mass. App. Ct. 713 (1980); *Joudrey v. Nashoba Community Hospital, Inc.*, 32 Mass. App. Ct. 974, 977 (1992); *Coughlin v. Bixon*, 23 Mass. App. Ct. 639, 644 (1987).

3. Since Dr. Daub and the technician staff at Hanscom Air Force Base Clinic were employees of the defendant United States, the defendant is liable if its employees were acting within the scope of their employment. In determining whether the conduct was within the scope of a person's employment, the court may take into account whether it was the type of conduct that he was employed to perform, whether the conduct occurred substantially within the authorized time and space limits, whether it was motivated, at least in part, by a purpose to serve the employer.

Authorities

Dias v. Brigham Medical Associates, Inc.,, 438 Mass. 317, 321-323 (2002); *Worcester Ins. Co. v. Fells Acres Day Sch., Inc.*, 408 Mass. 393, 404 (1990); *Swasey's Case*, 8 Mass. App. Ct. 489, 494 (1979); Restatement (Second) of Agency, §220(2) (1958).

SILAS CALHOUN and EMILY CALHOUN, Individually and as Parents and Next Friends of ESTELLA CALHOUN, By their Attorney,

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Dated: 09/19/07

CERTIFICATE OF SERVICE

I, Michael A. Appel, hereby certify that this document, filed through the ECF system, will be sent electronically to the registered participants as identified on the Notice of Electronic Filing (NEF) and paper copies will be sent to those indicated as non- registered participants on 09/19/07.

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